

## CLAIMS

What is claimed is:

- 1           1.       A method for providing efficient state transfer, comprising:  
2                establishing a connection between a mobile node and a first network  
3                element, wherein the mobile node has an associated reference state that is  
4                updated in response to state changes sent by the mobile node;  
5                establishing a connection between the first network element and a  
6                second network element in response to a request from the mobile node;  
7                forwarding messages from the first network element to the mobile node  
8                via the second network element;  
9                sending an acknowledgment message from the first network element to  
10               the mobile node, wherein the acknowledgment message includes the updated  
11               reference state; and  
12               establishing a connection between the mobile node and the second  
13               network element, in accordance with the updated reference state.
- 1           2.       The method of claim 1, wherein the acknowledgment message  
2               further comprises a header compression destination option.
- 1           3.       A method for providing efficient state transfer in a mobile  
2               network, comprising:  
1                sending a router solicitation message from a mobile node to a next  
2                router;  
3                sending a router advertisement message from the next router to the  
4                mobile node in response to the router solicitation message, wherein the router  
5                advertisement message includes a header compression capability option;

6 sending a binding update message from the mobile node to a previous  
7 router, wherein the binding update message includes a routing header  
8 pointing to the next router and at least one destination option;

9 processing the binding update message in accordance with the routing  
10 header and the destination option; and

11 sending a binding acknowledgment message from the previous router  
12 to the mobile node, wherein the binding acknowledgment message includes a  
13 routing header pointing to the next router.

1 4. A system for providing efficient state transfer, comprising:

2 means for establishing a connection between a mobile node and a first  
3 network element, wherein the mobile node has an associated reference state  
4 that is updated in response to state changes sent by the mobile node;

5 means for establishing a connection between the first network element  
6 and a second network element in response to a request from the mobile node;

7 means for forwarding messages from the first network element to the  
8 mobile node via the second network element;

9 means for sending an acknowledgment message from the first network  
10 element to the mobile node, wherein the acknowledgment message includes  
11 the updated reference state; and

12 means for establishing a connection between the mobile node and the  
13 second network element, in accordance with the updated reference state.

1 5. The method of claim 4, wherein the acknowledgment message  
2 further comprises a header compression destination option.

1 6. A system for providing efficient state transfer in a mobile  
2 network, comprising:

1 means for sending a router solicitation message from a mobile node to  
2 a next router;

3 means for sending a router advertisement message from the next  
4 router to the mobile node in response to the router solicitation message,  
5 wherein the router advertisement message includes a header compression  
6 capability option;

7 means for sending a binding update message from the mobile node to  
8 a previous router, wherein the binding update message includes a routing  
9 header pointing to the next router and at least one destination option;

10 means for processing the binding update message in accordance with  
11 the routing header and the destination option; and

12 means for sending a binding acknowledgment message from the  
13 previous router to the mobile node, wherein the binding acknowledgment  
14 message includes a routing header pointing to the next router.

1 7. A computer program product comprising a computer usable  
2 medium having computer readable code embodied thereon for providing  
3 efficient state transfer, the computer program product comprising:

4 computer readable program code devices for establishing a connection  
5 between a mobile node and a first network element, wherein the mobile node  
6 has an associated reference state that is updated in response to state  
7 changes sent by the mobile node;

8 computer readable program code devices for establishing a connection  
9 between the first network element and a second network element in response  
10 to a request from the mobile node;

11 computer readable program code devices for forwarding messages  
12 from the first network element to the mobile node via the second network  
13 element;

14 computer readable program code devices for sending an  
15 acknowledgment message from the first network element to the mobile node,  
16 wherein the acknowledgment message includes the updated reference state;  
17 and

18 computer readable program code devices for establishing a connection  
19 between the mobile node and the second network element, in accordance  
20 with the updated reference state.

1 8. The computer program product of claim 7, wherein the  
2 acknowledgment message further comprises a header compression  
3 destination option.

1 9. A computer program product comprising a computer usable  
2 medium having computer readable code embodied thereon for providing  
3 efficient state transfer, the computer program product comprising:

1 computer readable program code devices for sending a router  
2 solicitation message from a mobile node to a next router;

3 computer readable program code devices for sending a router  
4 advertisement message from the next router to the mobile node in response  
5 to the router solicitation message, wherein the router advertisement message  
6 includes a header compression capability option;

7 computer readable program code devices for sending a binding update  
8 message from the mobile node to a previous router, wherein the binding  
9 update message includes a routing header pointing to the next router and at  
10 least one destination option;

14 computer readable program code devices for sending a binding  
15 acknowledgment message from the previous router to the mobile node,  
16 wherein the binding acknowledgment message includes a routing header  
17 pointing to the next router.

# SECRET